

# MICROTEK

In - C i r c u i t   E m u l a t o r s

## for MMX Pentium® Processors

### Three Pentium PowerPack® Emulators for Pentium® MMX Processors

*The Powerpack® family of Pentium emulators from Microtek provide range of price/performance to meet the needs of everyone on the development team. Each of the three products provides a carefully chosen set of debug features.*

**ITP-Pentium:** *The ITP-Pentium provides a JTAG based source level debugger for the software development effort.*

**SW Plus Pentium:** *SW Plus Pentium provides trace and triggering to resolve most software performance issues.*

**EA-Pentium:** *The EA-Pentium enhances trace and triggering to solve hardware timing issues or subtle hardware operations affecting product performance. The SW Plus and EA also support software performance analysis which requires no code changes or instrumentation. The upgradable PowerPack family provides a strong set of features at attractive prices.*

### PowerPack® EA-Pentium: Our Full Feature Pentium Solution

When you need all of the power of a full-featured emulator, the EA-Pentium is the product to choose. The EA-Pentium lets you view source code during debug. This increases your productivity by showing you actual source as the execution occurs. Multiple memory windows allow you to view execution at the code level and see the modification to the data area. You can also move variables into a watch window which shows their values even as execution continues. Another important debug feature is the stack window. This window shows the call stack and displays variables that are within the current scope of execution. The variable window and the stack window also allow you to modify variable values.

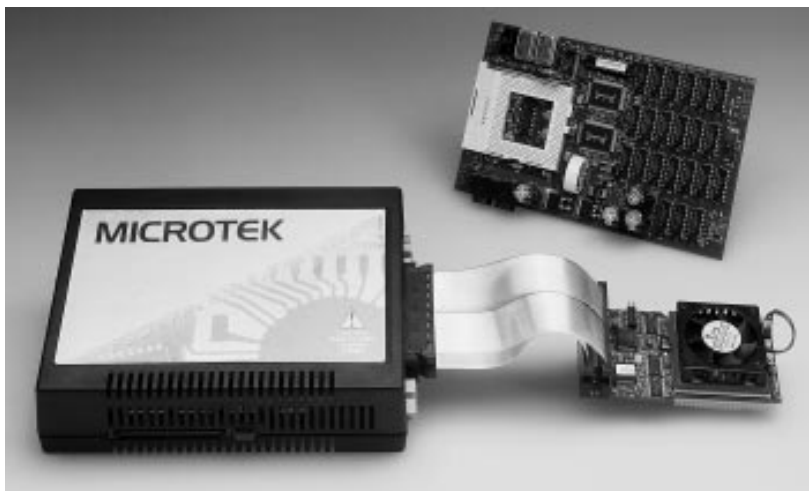
EA-Pentium with MMX support enhances your control of the embedded system. It provides you a way to load code into the target system's RAM without using any

additional resources of the target. This can be especially important if the target was developed with no extra serial ports. 256 software breakpoints can be set to allow you

flexibility in partitioning your debug problem. Four hardware breakpoints allow you to work in ROM and Flash. Single step operation at the source level or assembly level and the ability to step over functions provide the control necessary to view complex code during debug. If you need to change the code,

the EA-Pentium is equipped with an assembler/disassembler that supports all of the Pentium instructions.

EA-Pentium with MMX support, enhances your productivity. By combining powerful analysis features with strong control features the EA-Pentium provides you with a way to move forward quickly in your development. The scripting language allows further productivity by allowing



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repeatable tasks to be automated. On-line help provides quick context-sensitive directions to allow you to stay on the job. Taken together, these features add up to enhanced productivity for the development team.

The trace is 160-bits wide with address, data, status lines and a 40-bit time stamp. This allows you to track down not only the executed code, but also show the memory reads and writes that occurred. The timestamp is an additional feature that gathers real-time execution numbers to help capture actual execution times of critical routines.

Along with this detailed trace feature is a triggering system to control emulation and trace. The triggering system can define events based on addresses, or ranges of addresses, data, or ranges of data, and also specify particular status signal patterns. These events can then be setup to trigger the system to halt emulation, or turn on or off the tracing system. This allows great flexibility in capturing execution events and allows display even while execution continues.

The ability to specify up to four levels of triggers adds additional power to the triggering system. Each trigger level is independent of the other. The features available on this emulator can be used to tackle the most elusive problems you will encounter in your embedded product.

#### Trace System

- 256k frames deep, 160 bits wide trace buffer.
- Collects trace with clock-edge resolution to bus speeds of 40 MHz. Collects trace with bus cycle resolution at bus speeds greater than 40 MHz.
- Pre- Post- and Center triggered trace.
- Qualified trace using complex triggers as filters.
- 40 bit time stamp with 40ns resolution on each trace frame.
- Linked cursor relates each trace frame back to the source code.
- Trace can start, stop and be displayed during full speed emulation.
- Trace capture can be controlled by complex event triggers.
- 8 external channels 4 level trace and trigger.
- Cache control for trace: none, all writes visible, all data reads/writes visible, all cycles visible.

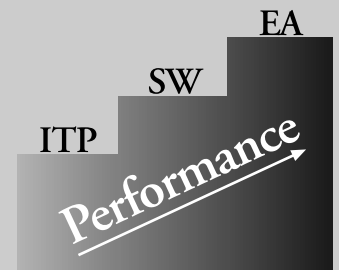
#### Trigger System

- 8 global event recognizers that monitor 32 address bits, 64 data bits and 23 status lines.
- Ranges, bit masking and negation on address and data.
- Two 16-bit event counter or two 16-bit timers or one 32-bit timer.
- 4 level sequencer controls complex triggers and debug registers.
- The trigger system controls trace collection, timestamp, external triggers and breakpoints.

## Processor Control and Display Features for PowerPack® EA, SW and ITP

- Supports 75 MHz - 200 MHz Pentium Processors
- Supports real, virtual-86, protected and system management modes of the processor
- Source Level Debug for toolchains that produce OMF-86 and OMF-386 output
- 256 Software Breakpoints
- Hardware Breakpoints implemented using the Pentium processor's debug registers
- Ability to break on memory and I/O access and writes
- Ability to single step at the source or assembly code level
- Trigger In/Out for cross triggering with other development equipment
- View and edit all internal registers
- Detailed self-test diagnostics

Now, you can preserve your investment by upgrading in the future



## PowerPack® ITP-Pentium: Lets Software Developers

ITP-Pentium enhances your vision of the embedded system. The ITP-Pentium lets you view source code during debug. This increases your productivity by showing you actual source as the execution occurs. Multiple memory windows allow you to view execution at the code level and see the modification to the data area. You can also move variables into a watch window which shows their values even as execution continues. Another important debug feature is the stack window. This window shows the call stack and displays variables that are within the current scope of execution. The variable window and the stack window also allow you to modify variable values.

ITP-Pentium enhances your control of the embedded system. It provides you a way to load code into the target system's RAM without using any additional resources of the target. This can be especially important if the target was developed with no extra serial ports. 256 software breakpoints can be set to allow you flexibility.

## PowerPack® SW *Plus* Pentium: Aids System Integration

The SW *Plus* Pentium with MMX support provides you, the development engineer, the power to uncover problems during the software/hardware integration stage. You have all of the processor control and display features of the EA-Pentium along with a trace that provides bus and instruction display. The trace provides execution history even when the processor is executing from its cache. The addition of the trace feature allows you to track back in execution history to see how the processor ended up in a particular error routine. The trace feature has the ability to be linked back to the source allowing you to identify quickly the portion of source code that is causing difficulty. The trace has the flexibility to start a trace, stop a trace and view a trace without affecting real-time emulation. This can be especially useful in applications like communication, where stopping asynchronous communication is not feasible.

Along with the bus level trace feature is a triggering system to control emulation and trace. The triggering system can define events based on addresses, or ranges of addresses, data, or ranges of data, and also specify particular status signal patterns. These events can then be set up to trigger the system to halt emulation, or turn on or off the tracing system.

The ability to specify up to four levels of triggers adds additional power to the triggering system. Each trigger level is independent of the other's.

### *Trace Buffer Features*

- 256k frames of executed instruction trace.
- Collects trace with bus level resolution at the rate of the processor's bus.
- Qualified trace using complex triggers as filters.
- 40-bit time stamp with 40ns resolution on each trace frame.
- Pre-, Post-, and Center triggered trace.
- Trace 100% accurate even with the cache enabled.
- Linked cursor relates each trace frame back to the source code.
- Trace can start, stop and be displayed independent of emulation.
- Trace capture can be controlled via the debug registers.
- 8 external channels 4 level trace and trigger.
- Cache control for trace: none, all writes visible, all data reads/writes visible, all cycles visible.

### *Trigger System*

- 8 global event recognizers that monitor 32 address bits, 64 data bits and 23 status lines.
- Ranges, bit masking and negation on address and data.
- Two 16-bit event counter or two 16-bit timers or one 32-bit timer.
- 4 level sequencer controls complex triggers and debug registers.
- The trigger system controls trace collection, timestamp, external triggers and breakpoints.

## See Their Code at Work

ty in partitioning your debug problem. Four hardware breakpoints allow you to work in ROM and Flash. Single step operation at the source level or assembly level and the ability to step



over functions provide the control necessary to view complex code during debug. If you need to change the code, the ITP-Pentium is equipped with an assembler/disassembler that supports all of the Pentium instructions, including the new instructions for MMX support.

ITP-Pentium interface enhances your productivity. By combining powerful analysis features with strong control features the ITP-Pentium provides you with a way to move forward quickly in your development. The scripting language allows further productivity by allowing repeatable tasks to be automated. On-line help provides quick context sensitive directions to allow you to stay on the job. Taken together these features add up to enhanced productivity for the development team.

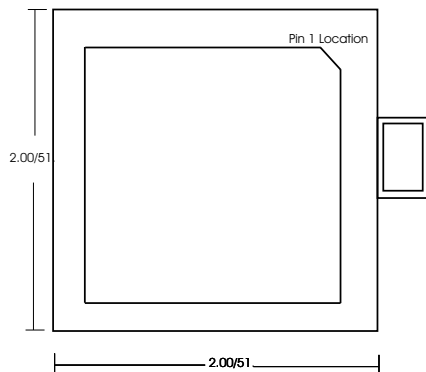
### *PowerPack® ITP-Pentium also includes:*

- 18 inch long flexible cable for easy connection to target

## PC Host Requirements

PowerPack SLD requires a 486 or better PC (Pentium recommended) with a minimum of 8 megabytes of RAM (16 recommended for Win95), an SVGA or better color monitor, 3.5" floppy drive, a free serial port and a mouse.

Operating System: Windows 3.1, 3.11, Windows 95

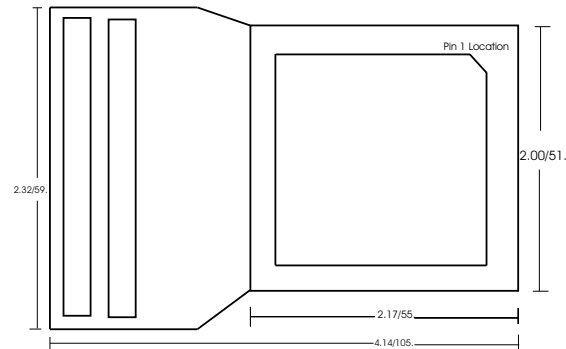


Target Adapter for ITP-Pentium Emulator  
(inches/mm)

## Dimensions & Environmental

Dimensions:	Chassis	Head
Height:	2.0"	1.3"
Width:	4.6"	2.3"
Length:	7.2"	4.1"

Operating Temperature	10 to 35° C
Storage Temperature	10 to 50° C
Relative Humidity	20 to 80%
Shipping Weight	10 lb.



Probe Dimensions for SW/EA Pentium Emulator  
(inches/mm)

## PRODUCT CODE DESCRIPTION

PP-EA-Pentium	<b>PowerPack EA-Pentium</b>	Consists of chassis, probe containing a Pentium Processor, 256k of trace, serial cable, and self-test board
PP SW Plus Pentium	<b>PowerPack SW <i>Plus</i> Pentium</b>	Consists of chassis, probe containing a Pentium Processor, 128k of trace, serial cable, and self-test board
PP-ITP-Pentium	<b>PowerPack ITP-Pentium</b>	Hardware-assisted debugger with chassis, cable, and adapter to attach to a socket of Pentium processor or JTAG debug port
PP-ITP-SAST	<b>SAST for ITP-Pentium</b>	Stand alone self-test board for ITP-Pentium including 100 MHz Pentium Processor.
PP-EASW-SAST	<b>SAST for EA/SW-Pentium</b>	Stand alone self-test board for EA/SW Pentium processor emulators
ITP-A2	<b>Adapter for Pentium/ JTAG support</b>	Provides JTAG debug port for ITP-emulator
GOLD-2Y	<b>Gold-2-Year</b>	Provides 2 years of warranty
GOLD-1Y	<b>Gold-1-Year</b>	Provides 1 year of warranty
GOLD-1R	<b>Gold-Renewal</b>	Extends existing warranty 1 year
GOLD-1D	<b>Gold-Discontinuous</b>	Provides coverage to equipment not currently covered



Products are warranted against defects in materials or workmanship for a period of 90 days. Contact your sales representative for information on our Gold Support Program – this provides hardware, software, and firmware updates, plus repair coverage for your emulator.

For more information about Service Support Options to match your project requirements, contact Lisa Rice at (800)886-7333x4038.

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